Listing of Claims
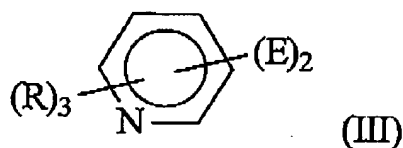
1. (Canceled)

2. (Currently Amended) A polymer comprising at least a first monomeric unit selected from (i) aromatic groups having a Formula I and at least one second monomeric unit selected from Formulae II through XI,
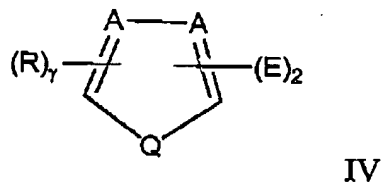
R

R

(I)

R^2 R^2
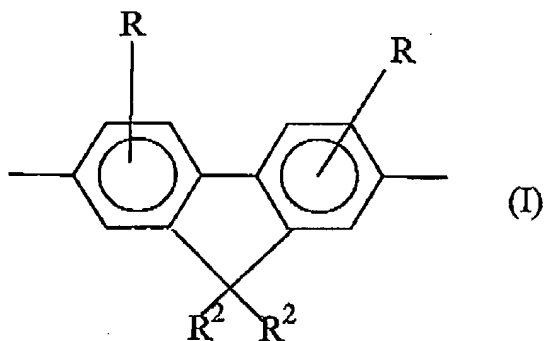
(ii) aromatic groups having Formula II,

$(R)_4$ $(E)_2$

(II)
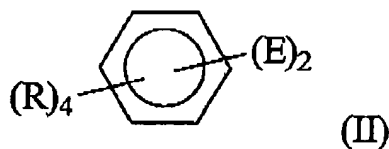
(iii) 6-membered heteroaromatic groups having Formula III,

$(R)_3$ $(E)_2$

N

(III)

(iv) 5-membered heteroaromatic groups having Formula IV,

A —— A

$(R)_7$ $(E)_2$

Q

IV

Page 2 of 17

(v) aromatic groups having Formula V,

(V)
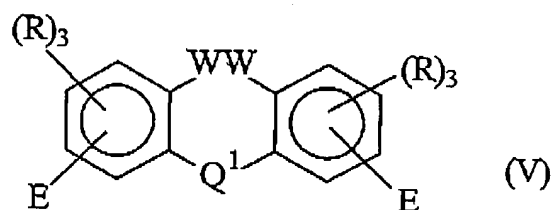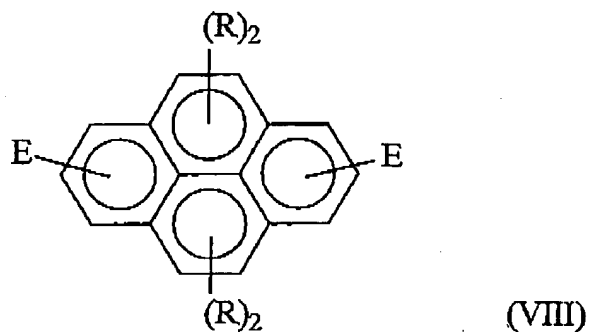
(vi) divalent fused ring aromatic groups having Formula VI through Formula VIII,

(VI)

(VII)

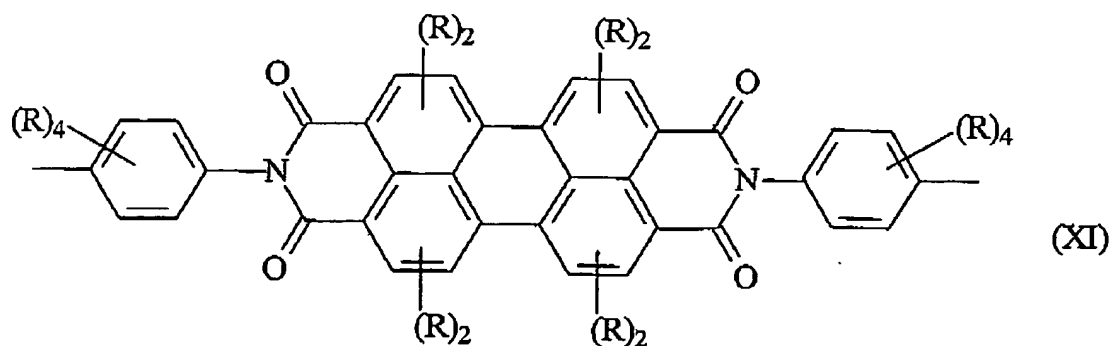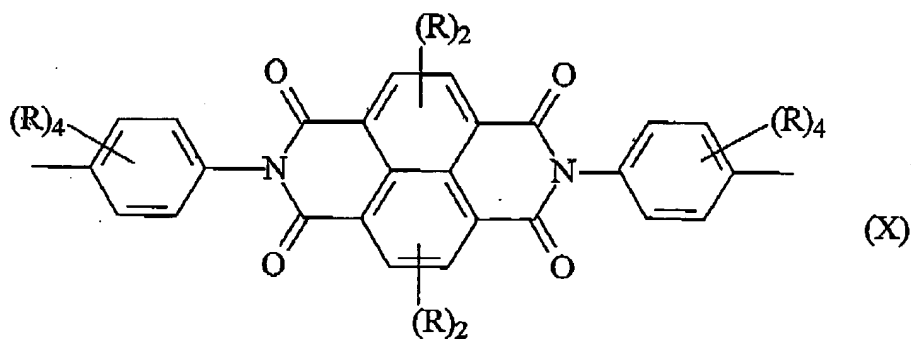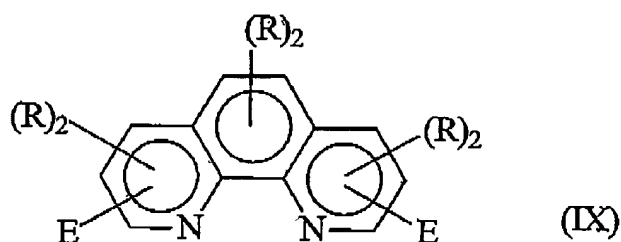Page 3 of 17
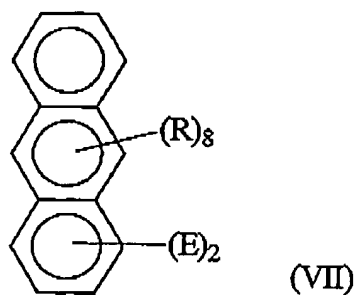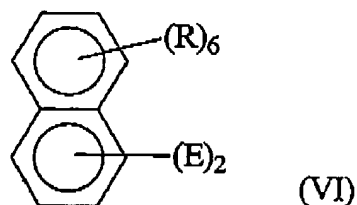
(VIII)

and Formula IX through Formula XI,


(IX)

(X)

(XI)

Page 4 of 17

Application No. 10/816,160
Docket No. PE0669USDIV

and (vii) combinations thereof, where:

in each of Formulae I, II, III, IV, V, VI, VII, VIII, and IX:

R is a substituent on a carbon atom in an aromatic ring, which can be the same
or different at each occurrence and is selected from ~~hydrogen~~ H, alkyl, aryl,
heteroalkyl, heteroaryl, F, -CN, -OR^1, -CO$_2$R^1, -C$_\psi$H$_\theta$F$_\lambda$, -OC$_\psi$H$_\theta$F$_\lambda$, -SR^1, -
N(R^1)$_2$, -P(R^1)$_2$, -SOR^1, -SO$_2$R^1, -NO$_2$, and beta-dicarbonyls having
Formula XII ~~shown in Figure 12; or~~

(XII)
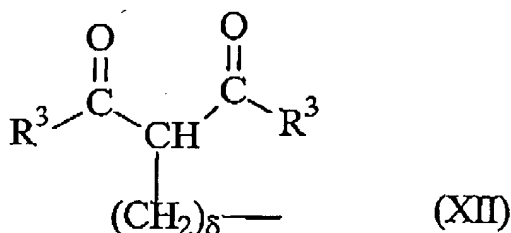
and optionally,

adjacent R groups together can form a ring selected from 5-membered
cycloalkyl, 6-membered cycloalkyl, 5- membered aryl, 6-membered aryl. 5-
membered heteroaryl and 6-membered heteroaryl,
such that:

R^1 is a substituent on a heteroatom which can be the same or different at
each occurrence and is selected from alkyl, aryl, heteroalkyl and
heteroaryl; and

ψ is an integer between 1 and 20, and θ and λ are integers satisfying
Equation A1 below:

$$\theta + \lambda = 2\psi + 1; \qquad \text{(Equation A1)};$$

R^2 is a substituent on a carbon atom not in an aromatic ring, which can be
the same or different at each occurrence and is selected from ~~hydrogen~~ H,
alkyl, aryl, heteroalkyl, heteroaryl and -C$_\psi$H$_\theta$F$_\lambda$,

with the proviso that the polymer contains at least one R substituent with the formula
-C$_\psi$F$_{2\psi+1}$;

E can be the same or different at each occurrence and is a single bond or a
linking group selected from arylene and heteroarylene;

Page 5 of 17

Application No. 10/816,160
Docket No. PE0669USDIV

in Formula IV:

A is independently at each occurrence C or N and γ is 0 or an integer selected
   from 1 or 2, such that when both A are N, then γ is 0; or when one of A is N
   and one of A is C, then γ is 1; or when both A are C, then γ is 2;

Q is O, S, SO$_2$, or NR^1 where:

   R^1 is a substituent on a heteroatom which can be the same or different at
      each occurrence and is selected from alkyl, aryl, heteroalkyl and
      heteroaryl;

in Formula V:

Q^1 is a carbonyl group, O, S, SO$_2$, or NR^1 where:

   R^1 is a substituent on a heteroatom which can be the same or different at
      each occurrence and is selected from alkyl, aryl, heteroalkyl and
      heteroaryl;

W is H, alkyl or heteroalkyl; or both of W together can represent one single bond;

in Formula VI:

the two E's are in the 1,4-, 1,5-, 1,8-, 2,3-, or 2,6- positions;

in Formula VII:

the two E's are in the 1,4-, 1,5-, 1,8-, 2,3-, 2,6-, or 9,10- positions;

in Formula VIII:

a first E is in the 1, 2, or 3 position, a second E is in the 6, 7, or 8 position;

in Formula IX:

a first E is in the 2, 3, or 4 position; a second E is in the 7, 8, or 9 position; and

in Formula XII:

   R^3 is selected from ~~hydrogen~~ H, alkyl, aryl, heteroalkyl and heteroaryl;

   δ is 0 or an integer from 1 to 12.

3. (Original) The copolymer of Claim 2 wherein the at least one of the R groups
in one or more of the at least one first monomeric unit is independently selected from
linear and branched butyl ~~n-butyl groups; linear and branched iso-butyl~~ groups; linear
and branched pentyl groups; hexyl groups, and octyl groups with and without olefinic

Page 6 of 17

Application No. 10/816,160
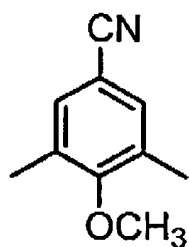Docket No. PE0669USDIV

unsaturation; phenyl groups, thiophene groups, carbazole groups, alkoxy groups, phenoxy groups and cyano groups.

4. (Original) The copolymer of Claim 2 wherein at least one of the R groups in one or more of the at least one first monomeric unit are independently selected from H, C_6-C_{12} alkoxy, phenoxy, C_6-C_{12} alkyl, phenyl and cyano.
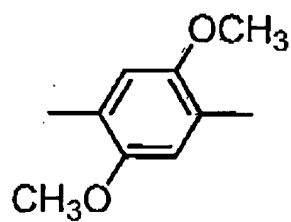
5. (Original) The copolymer of Claim 2 wherein one or more of the at least one second monomeric unit is selected from Formulae II(a) through II(z),

II(a)

II(b)

II(c)

II(d)

II(e)
COOCH$_3$

II(f)
COOCH$_3$

II(g)
CH$_3$O   OCH$_3$

II(h)
OCH$_3$

Page 7 of 17
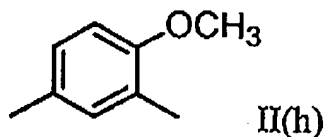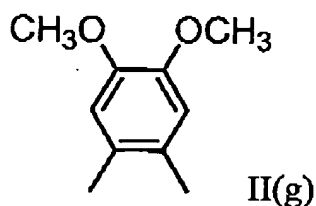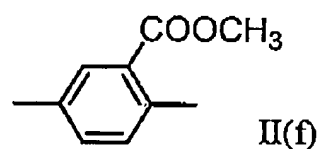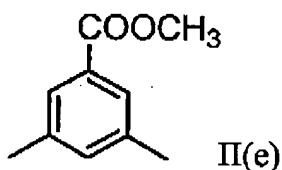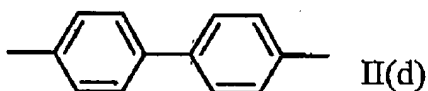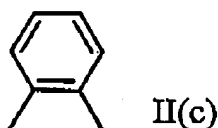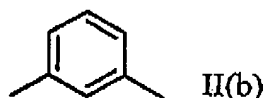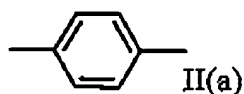
II(i)

II(j)
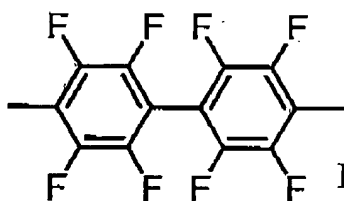
II(k)
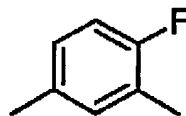
II(l)

II(m)

II(n)
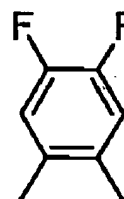
II(o)
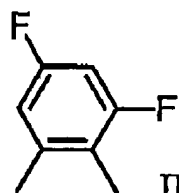
II(p)
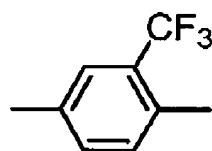
II(q)

Page 8 of 17
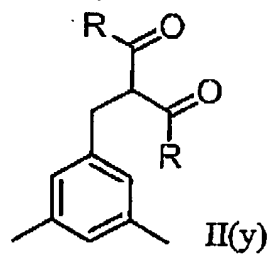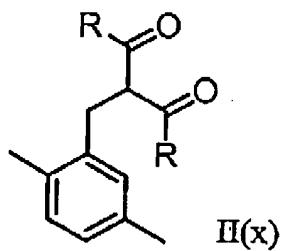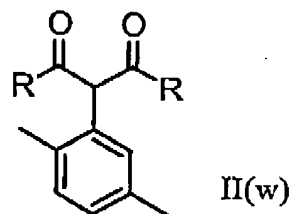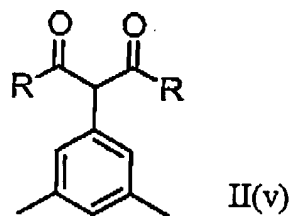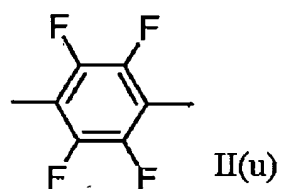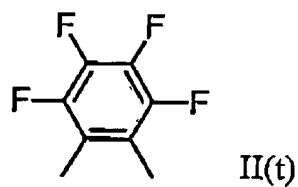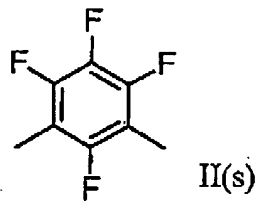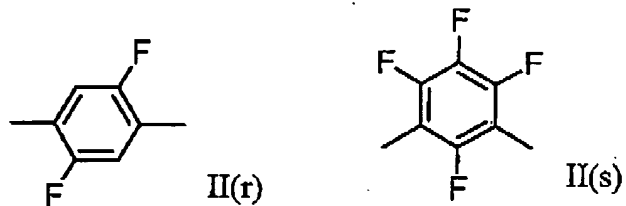
Application No. 10/816,160
Docket No. PE0669USDIV

II(r)

II(s)

II(t)

II(u)

II(v)

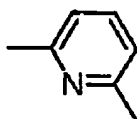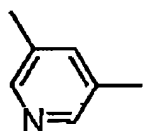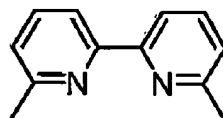II(w)

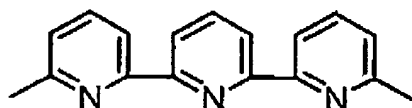II(x)

II(y)

Page 9 of 17
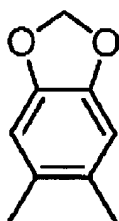
II(z)
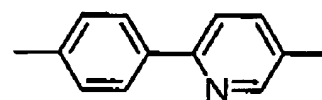
III(a) through III(g),
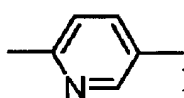
III(a)

III(b)

III(c)

III(d)

III(e)

III(f)

III(g)

IV(a) through IV(h),

Page 10 of 17
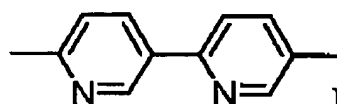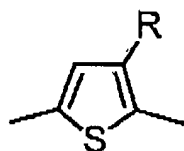
IV(a)
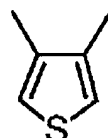
IV(b)

IV(c)

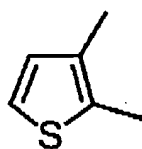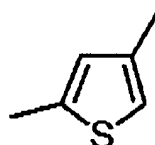IV(d)

IV(e)

IV(f)
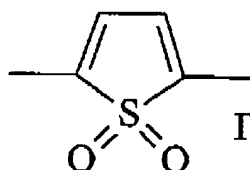
IV(g)
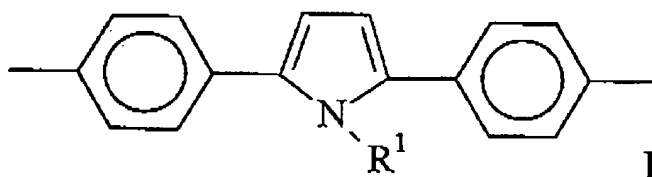
IV(h)

V(a) through V(e),

V(a)

Page 11 of 17

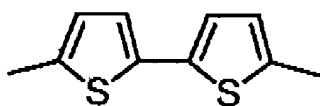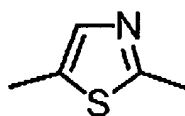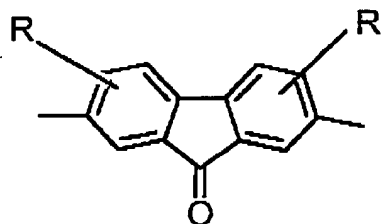Application No. 10/816,160
Docket No. PE0669USDIV

V(b)

V(c)

V(d)

V(e)

VI(a) through VI(d),

VI(a)

VI(b)

Page 12 of 17
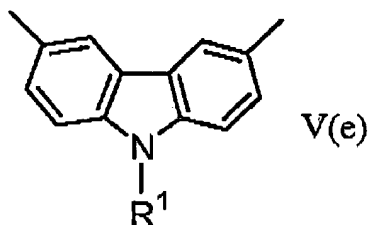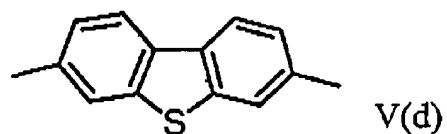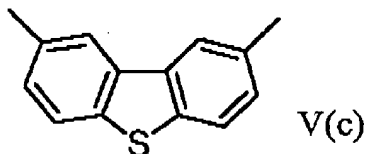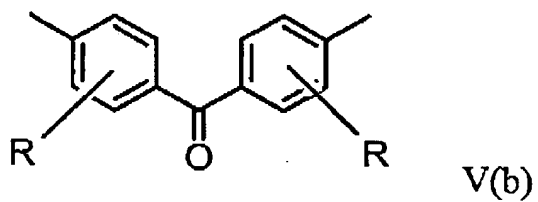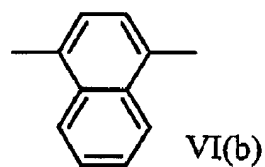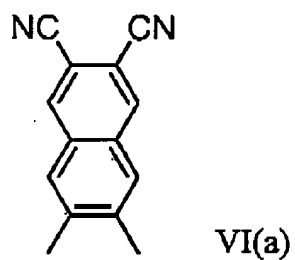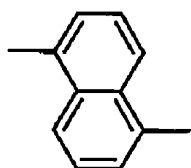
VI(c)
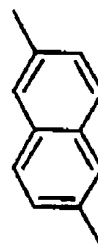
VI(d)

and VII(a) where:
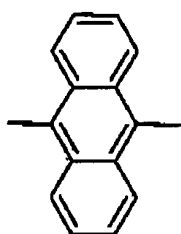
VII(a)

in Formulae II(v) through II(y), IV(a), V(a), and V(b):

R is as described above for each of Formulae I, II, III, IV, V, VI, VII, VIII through XI;

in Formula IV(h):

R^1 is a substituent on a heteroatom which can be the same or different at each occurrence and is selected from alkyl, aryl, heteroalkyl and heteroaryl; and

in Formula V(e):

R^1 is a substituent on a heteroatom which can be the same or different at each occurrence and is selected from alkyl, aryl, heteroalkyl and heteroaryl.

6. (Currently Amended) The copolymer of Claim 2, wherein one or more of the at least one second monomeric unit has Formula II wherein R is selected from:

~~hydrogen~~ H;

alkyl;

aryl;

heteroalkyl;

Application No. 10/816,160
Docket No. PE0669USDIV

heteroaryl;

F;

-CN;

-NO$_2$;

a beta-dicarbonyl having Formula XII ~~shown in Figure 12~~:

$$R^3-\overset{\overset{\displaystyle O}{\|}}{C}-\underset{\underset{\displaystyle (CH_2)_\delta}{|}}{CH}-\overset{\overset{\displaystyle O}{\|}}{C}-R^3 \qquad (XII)$$

-C$_\psi$H$_\theta$F$_\lambda$;

-OC$_\psi$H$_\theta$F$_\lambda$; and

-P(R^1)$_2$, -SOR^1, -OR^1, -CO$_2$R^1, -SR^1, -N(R^1)$_2$, and -SO$_2$R^1, where R^1 is a straight chain or branched alkyl of from 1 to 20 carbons or a straight chain or branched heteroalkyl.

7. (Currently Amended) The copolymer of Claim 2, wherein one or more of the at least one second monomeric unit has Formula II wherein R is selected from:

alkyl groups having from 1 to 12 carbon atoms;

partially or fully fluorinated alkyl groups having from 1 to 12 carbon atoms ; ~~especially CF$_3$~~ ;

aryl groups having from 6 to 20 carbon atoms;
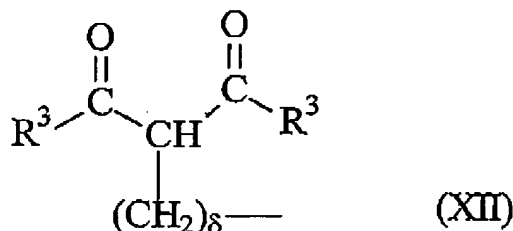
heteroaryl groups having from 4 to 20 carbon atoms and substituted with O, S, or N;

<u>OR^1</u> ~~alkoxy~~ groups having from 1 to 12 carbon atoms; and

<u>CO^{2}R^1 groups</u> ~~esters~~ having from 3 to 15 carbon atoms.

8. (Original) The copolymer of Claim 2, where one or more of the at least one second monomeric unit has Formula III wherein:

R groups are selected from ~~hydrogen~~ <u>H</u>, C$_6$-C$_{12}$ alkyl groups, C$_6$-C$_{20}$ aryl groups, and C$_2$-C$_{20}$ heteroaryl groups; and

Page 14 of 17

E linking groups are selected from pyridinediyl ($-C_5H_4N-$) and bipyridinediyl ($-C_5H_4N- C_5H_4N-$).

9. (Original) The copolymer of Claim 2, wherein one or more of the at least one second monomeric unit has Formula IV wherein:

R groups are selected from H, C_6-C_{12} alkyl groups, C_6-C_{20} aryl groups, and C_2-C_{20} heteroaryl groups; and

E linking groups include pyrrolediyl ($-C_4H_3N-$) and thiophenediyl ($-C_4H_3S-$).

10. (Original) The copolymer of Claim 2, wherein one or more of the at least one second monomeric unit has Formula V wherein:

R groups are selected from H, C_6-C_{12} alkyl groups, C_6-C_{20} aryl groups, and C_2-C_{20} heteroaryl groups; and

the two W represent one single bond.

11. (Original) The copolymer of Claim 2, wherein one or more of the at least one second monomeric unit has one of Formulae VI through XI wherein:

R groups are selected from H, C_6-C_{12} alkyl groups, C_6-C_{20} aryl groups, and C_2-C_{20} heteroaryl groups; and

in Formula VI:

the E's are in the 1,4-, 1,5-, 1,8-, 2,3-, or 2,6- positions;

in Formula VII:

the E's are in the 1,4-, 1,5-, 1,8-, 2,3-, 2,6-, or 9,10- positions.

12-13. (Canceled)

14. (Original) An electronic device comprising at least one electroactive layer comprising a polymer selected from the polymer of Claim 2.

15-20. (Canceled)